

Students' learning on labour ward calls

STUDENT INTERNS' PERCEPTIONS OF LEARNING DURING LABOUR WARD CALLS

by

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Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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INTRODUCTION

The aim of medical education is to produce physicians who will work competently in the future (Karle 2004). For obstetric care this implies an optimal outcome for mothers and their babies. However, local data indicate an unacceptably high rate of avoidable factors related to suboptimal management, resulting in poor outcomes (Pattinson et al 2009). A lack of basic skills, including inability to interpret clinical findings, underlies these errors.

There therefore is a clear need for more health workers with excellent skills to address these problems where they occur. However, lately there has been a decrease in the number of medical school graduates in the United Kingdom (UK) and the United States of America (USA) who choose obstetrics and gynaecology (O&G) as a career (Bienstock & Laube 2005; Gariti et al 2005; Siassakos et al 2009; Whitten & Higham 2007; Anderson et al 2008; Schnuth et al 2003 and Blanchard et al 2005). The O&G clerkship has been rated the worst overall educational experience in medical school (Bienstock & Laube 2005). A task force in the USA identified the improvement of clerkship as an immediate priority, starting with an interactive online module to improve physicians' practical teaching skills.

Whitten & Higham (2007) report that 25% of British students are discouraged by the working conditions and that tensions in the labour ward result in negative undergraduate experiences that put off students. Factors working against students and junior doctors choosing a career in O&G centre around working terms and conditions, a fear of litigation, and poor undergraduate experience. Suggestions for improvement include the identification of positive role models and efforts to improve the labour ward experience for students. The experience that a medical student gains during clinical attachments in general was found to have a significant impact upon perceptions of the specialty as a career (Whitten & Higham 2007).

Information on how undergraduates learn in a labour ward during obstetric calls is limited (Griffith et al 2009 and Durak 2008). However, participation in work-related activities was crucial for the development of the "personal knowledge" of postgraduate students in O&G who learn by tackling the everyday challenges of clinical work (Teunissen et al 2007a and 2007b).

This is probably true for undergraduates as well, which implies that adequate labour ward exposure is essential to reach the desired outcomes (Karle 2004). Undergraduate medical training at Stellenbosch University (SU) culminates in the late clinical phase, which consists of four rotations of 15 weeks each. Groups of

approximately 20 students in their fifth or sixth year rotate through O&G for six weeks. The groups are allocated to one of five clinical "firms" with similar duties as far as patient care and teaching are concerned. The student interns (SIs) are involved in all the clinical activities of the firm, are considered full members of the team and are given specific responsibilities. Teaching consists of two discussions per day for the whole group, while the other teaching occurs on the clinical platform within the firm. Training is focussed on acquiring clinical skills, including clinical reasoning, which is considered necessary to function efficiently as an intern in the following year (as stipulated in "The Profile of the Stellenbosch Doctor", a faculty document outlining the vision concerning undergraduate education). The expected outcomes are clearly communicated to SIs in the printed guidelines. The emphasis of these outcomes is on diagnostic and clinical management skills, addressing the major causes of mortality and morbidity in South Africa.

Students see pregnant patients daily. They also have to do a weekly "call" of 24 hours during which they should participate actively in patient management under supervision. These long shifts are necessary to increase SI exposure to complicated cases that may occur throughout the day or night and also to enable them to observe patients throughout the labour process, which may last several hours. Several consultant-led activities during calls are aimed at facilitating learning, including a post-call meeting during which selected cases of the previous 24 hours are discussed, an initial "hand-over" ward round in the labour ward, during which SIs from the previous 24-hour shift present their cases, another ward round later in the day, followed by the next "hand-over" round the following morning. SIs have to show their clinical knowledge and reasoning when presenting cases. They also work closely with the registrar on call, who does several ward rounds during the shift.

This state of affairs was recently disturbed when SIs queried the value of 24-hour calls as a learning opportunity. The seriousness of the request caused the faculty to look deeper into the matter. The aim of this study was to quantify the opinion of the SIs on whether the format of the present 24-hour labour ward calls is acceptable and whether calls are optimal for learning the required skills to function efficiently as an intern. In addition, qualitative research methods were used to investigate perspectives on these questions in an attempt to understand the issues underlying individual viewpoints. We further assessed the opinions of the SIs on their perceived ability to manage a labour ward under the supervision of senior clinicians, which is an implied outcome of the rotation.

METHODS

A mixed method approach includes both quantitative and qualitative research methods to describe the attitudes of participants and to explore individual perspectives on a topic (Ivankova 2008). We followed this approach (See Figure 1) to describe and explore SIs' views on the utilisation of the labour ward as an area of learning of the skills required to work competently in the future. This contributed to the validation of the data by means of triangulation. The central question of the study was whether the SIs regard the current 24-hour labour ward calls as optimal for learning, and whether they thought that calls were acceptable.

Quantitative and qualitative data were collected concurrently. The content of the questionnaires was observed and the open-ended questions were adjusted according to new data gathered, where applicable. The quantitative data were obtained primarily from surveys by means of separate questionnaires administered to the SIs. Quantitative data analysis took place only after the conclusion of data collection. Focus group discussions were used to gather the qualitative data required to further explore the research questions. Successive groups may uncover new perspectives simply because of different experiences in practical blocks in disciplines other than O&G. Several authors therefore encourage the concurrent analysis of qualitative data during data collection (Kuper 2008). This allows the researcher to refine questions as more is learnt about the topic (Kuper 2008 and DiCicco-Bloom 2006). Questions that are not effective at eliciting the necessary information can be dropped and new ones can be added (DiCicco-Bloom 2006). Focus group discussions were continued until no new themes surfaced in consecutive group discussions.

Figure 1 comes here

Surveys

The content of the questionnaire was based on notes made during two previous meetings with the class representative, as well as an hour-long interview with two SIs at the end of their clinical rotation (see Addendum 1). Typed questionnaires were distributed to the whole group of SIs at the end of their rotations, immediately after the completion of their end-of-block assessment. Apart from obtaining demographic data, the questions were aimed at describing the SIs' opinions of the value of the 24-hour call and its different components, including the different learning activities and the roles of the registrars and the consultants.

The questionnaire contained open-ended and closed-ended questions (Maree 2008). Closed-ended questions were used to obtain the quantitative data required specifically to describe the demographic and other distinct characteristics of the study group. They included dichotomous and multiple choice questions, as well as questions using Likert scales to assess how the SIs feel about aspects such as the value of the different learning opportunities while on call, as well as factors that may influence learning.

Open-ended questions were included to encourage the respondents to include more information, including their feelings and attitudes, by explaining their answers in their own words. They invited, amongst others, reasons why SIs may feel they are inadequately prepared for certain aspects of their role as interns, and suggestions to improve the learning experience. The aim of the questionnaires was twofold: firstly to collect quantitative data and secondly to locate the participants of the focus group discussions within the larger group in respect of the questions or issues that were addressed in both the focus group discussions and the questionnaire.

The questionnaires were available in Afrikaans and English, the languages of tuition in the MBChB course at SU. All the participants were actively involved in labour

ward activities. The questionnaires were assessed continuously and the open-ended questions were refined when indicated.

Focus group discussions

The focus group discussions took place in the fifth week of the rotation and the participants were selected from that half of the group that had completed their rotation in obstetrics during the first three weeks. The primary aim of the focus group discussion was to establish the group's view on the value of the labour ward calls and, specifically, to delve into the reasons for these opinions. The focus group discussions took place around a table with the members facing each other. A semi-structured approach was followed. The participants were initially asked for comments on the statement that the current calls offered optimal opportunities for learning. This gave rise to an open and interactive discussion and the researcher would only prompt the participants to comment on some aspects in the questionnaire that had not been discussed or to clarify unclear statements. The conversation was tape-recorded, while the researcher made notes to assist with the later transcription.

Analysis of data

Data analysis was done concurrently with data collection and discussions were arranged with consecutive groups until the data was saturated after three focus group discussions. (Kuper 2008). In other words, no new themes materialised in comparison to the data that had been collected previously.

Each respondent's replies to the open ended questions in the questionnaires were analysed qualitatively using content analysis. Substantive statements were identified and a set of categories under simple headings was derived. All statements were fitted into the categories, and statements that did not fit into the categories were identified. Categories were revised and modified as necessary and subsequently classified according to the research questions. Analytical grids were constructed as

spreadsheets and each participant's response was portrayed as it applied to particular categories, which were documented in columns.

The analysis of the quantitative data was done after all the data had been gathered. Discrete data were categorised as proportions and were compared using the χ^2 test and calculating the odds ratio (OR) and the 95% confidence limits (95% CL). Fisher's exact test was used where the number in any cell was less than five. Continuous data were compared by analysis of variance if normally distributed, or otherwise with the rank sum test. Where applicable, a p-value of less than 0.05 was considered to be statistically significant. The statistical significance of responses between clearly definable subgroups, such as fifth- and sixth year students, male and female respondents, SIs from different firms and responses according to levels of experience of the SI training, was analysed in detail. Individual confounders that may have influenced the SIs' perceptions of whether current calls were optimal for learning were identified using χ^2 or Fisher's exact tests. We subsequently used logistic regression to assess the influence of these factors on SIs' perceptions. Data analysis was done using SSPS 17.0 for Windows.

The conversations were recorded during the focus group discussions and transcribed verbatim. Typed transcripts were read while listening to the recording and transcription notation notes were added. The principles of content analysis were then followed. The data sets were read to develop a general impression as well as an understanding of the context of specific statements. "Segments of meaning" were coded, which were then classified into categories. Thematic patterns were created on the basis of associations between categories, and the results were organised into patterns of related themes. (See Addendum 2).

The local ethics committee approved the study. The participants in the focus group discussions gave informed consent. The voluntary return of the questionnaires was

interpreted as giving consent for its inclusion in the study database. Questionnaires were totally anonymous.

RESULTS

Two hundred and three SIs returned the questionnaires (95%). The return rate was above 90% in each of the eight groups. The mean age of the respondents was 23.8 ± 1.1 years. Other demographic details of the cohort are summarised in Table 1. No new themes surfaced during the third focus group discussion, after which they were stopped. The data related to the acceptability and efficacy of calls are presented separately from those related to the SIs' perceptions of their own abilities.

Table 1 comes here

Acceptability and efficacy of calls

One hundred and twenty-eight (63%) of the SIs indicated that the current labour ward calls were not optimal for training, while 101 (50%) felt that the calls were unacceptable (see Table 2). Several factors were significant predictors of whether the SIs considered the calls to be optimal for learning or not (see Table 3). SIs on their first or second clinical rotation were less likely to consider the calls suboptimal. The converse was true when SIs thought that the calls were unacceptable or when they had some other concerns about the calls. However, when the opinions of the SIs on whether the current calls were optimal for learning was modelled as a function all confounders in Table 3, the only two that remained significant were whether the SIs thought the calls were acceptable and whether the SIs had learned a lot from their registrars.

Table 2 comes here

Table 3 comes here

Female students were more likely to find the calls unacceptable, but this difference did not quite reach statistical significance (59.3% vs. 45.1%; $p = 0.053$; OR = 1.77 (95%CL = 0.95–3.29)). Otherwise, the factors contributing to an opinion that the calls were unacceptable were similar to those listed in Table 3. Three confounders for not learning a lot from one's registrar were significant in a logistic regression model: disagreement with the statements that the SIs had a good relationship with their registrar ($p < 10^{-6}$), disagreement that their registrar's knowledge of obstetrics was good ($p < 10^{-6}$), and disagreement that the amount of service provision expected during the obstetric calls was reasonable ($p = 0.037$).

The SIs voiced concern about four well-defined issues related to reduced learning opportunities during calls in the labour ward. The duration of the calls prompted more responses than any other issue. Suggestions for change included shortening the calls, with or without additional shorter calls, allowing the SIs to go home when the calls were quiet, and to divide the calls amongst the SIs in the firm. The motivations for a change were that the SIs became tired and that teaching occurred less after a certain time (typically 23:00 or 24:00). Tiredness leads to less learning during the call (irrespective of the teaching quality) and on the day after the call. A few SIs were concerned that the risk of errors of judgement increased when they were tired. The focus group discussions supported the information brought forward from the questionnaires and provided a better understanding of the quantitative surveys. Typical individual responses were as follows:

Calls exhaust a person so that you cannot study for two days

One is so tired that you are not productive with regards to learning

Need time to read up after seeing cases for personal learning – too tired

Secondly, the SIs felt that they were often doing someone else's work, which did not contribute to learning (scut work). Three main patterns emerged in this group. The

SIs were upset at being expected to do work totally unrelated to what they perceived to be a doctor's work. Supporting statements included:

Instead of being the porter and person who does all the dirty work after hours

Why does the hospital appoint porters?

Too busy running around being a porter for bloods

We are used to do odd jobs & porter work for 24 hrs

The major impact of these duties was that they distracted the SIs from participating in activities from which they can learn, specifically pelvic examinations. Some comments were:

Being called to the wards for drips caused that I missed out on pelvic examinations

We were Jacks of all trades but not able to monitor labour progress in a single patient

The SIs also expressed concern that they were doing the work of nursing staff. There were objections against doing the work as such, and also because the perception was that nurses were not always too busy to do their own work. The SIs were particularly critical of the role of midwives in creating a disagreeable atmosphere during calls. Their remarks included:

If however we were actually not fetching bedpans or doing the nurses' jobs I would gain more from the call

I am NOT satisfied with ALSO doing the work of staff nurses

Students required to perform nursing duties --> administer meds, bed pans

The sister exploits you

There were also some remarks related to doing the work of the doctors, specifically that of the registrars.

There were no apparent differences in the views of SIs who found the 24hour calls suboptimal for learning, irrespective of whether they thought the calls were acceptable or not.

SIs were also concerned that lost opportunities in the labour ward and a lack of contact with patients reduced optimal learning opportunities. These concerns were partially addressed in the themes above, but additional data emerged from other remarks and from the focus group discussions. There were two main reasons for lost opportunities: the reluctance of registrars to involve SIs and (as before) less patient contact because the SIs were away from the labour ward doing something else.

Eighty-five (41.9%) SIs indicated that they did not learn a lot from their registrars. This was attributed to a lack of time due to the busy schedule of the registrars, but also to reluctance by some registrars to become involved in the training of SIs. Explanations for the latter included a perceived lack of interest in teaching, individual personality traits and inexperience in both clinical abilities (lack of knowledge) and teaching. Furthermore, several SIs had dissimilar experiences when they had more than one registrar during their rotation. The following were typical responses:

Allocate more experienced registrars with the students

They paid very little interest if any to teaching

The registrars are sometimes too busy with everything happening in labour ward

It is not that she knows little, but she communicates poorly

It was so busy and we had 2 or 3 registrars in our rotation

It varies with the personality of the doctor. Nothing you can do about it.

The SIs had several proposals to improve registrar teaching. These included obligatory time dedicated to tutorials and daily ward rounds during which the SIs had to present their patients briefly, followed by a discussion of the approach to management in each case. There were suggestions that the SIs should not be allocated to registrars who were unwilling to teach.

There were statistically significant differences in the assessment of the value and utilisation of the potential learning opportunities of the five different consultant-led activities during a call. The post-call meeting and the "hand-over" ward round on the days *after* a 24-hour call contributed significantly less to learning than the comparable ward round on the day of call or the post-call meeting on any other day. Seventy-four percent of the SIs agreed or strongly agreed that they learned a lot during the consultant's round on the call when they presented the patients themselves.

The responses to some of the other quantitative questions are summarised in Table 4.

Table 4 comes here

Perception of own abilities

An analysis of the survey data revealed that 63% of the SIs agreed or strongly agreed that their knowledge and skills were sufficient to be placed in charge of a labour ward, provided that someone was available to contact concerning any problems they may identify. SIs who did Obstetrics during the second half of the rotation were significantly more likely to agree or strongly agree with the statement ($p = 0.02$, OR = 2.09 95% CL = 1.05 – 4.15). Groups that were significantly less likely to disagree or strongly disagree included those SIs who indicated that they did not learn a lot on the two hand-over rounds or their consultant round, those who thought that they had been inadequately informed at the beginning of the block, and those

who indicated that they did not make optimal use of the opportunity to learn from their patients.

The 127 students who were positive about their abilities offered a total of more than 300 statements in support. Two dominant categories surfaced: firstly, the SIs valued their clinical skills. The competencies mentioned were generally of major clinical importance and included a spectrum ranging from history taking and clinical examination to the management of the mother and her baby in labour. Several specific conditions were mentioned, while the SIs were confident about their abilities to prescribe medication.

Secondly, the SIs identified their ability to manage obstetric emergencies. Examples were often of a more general nature, such as an ability to recognise and manage emergencies or life-threatening conditions and to recognise foetal distress. Some conditions, such as pre-eclampsia and abruptio placentae, as well as their resuscitation skills, were specified. A third, smaller category consisted of personality traits, such as an ability to manage pressure and to work in a team, self-confidence, knowledge of own limitations and the willingness to seek advice when needed.

Those who disagreed with the statement were mostly concerned about their lack of clinical skills, which often matched those that their colleagues put forward as attributes. This group was much more specific, emphasising uncertainty about their ability to manage labour and to prescribe medication. There was a remarkable concern about their ability to assess progress in labour. Registrars were often implicated as obstacles to learning. A number of SIs were concerned about their ability to perform tasks that normally would be taught later in their careers, such as surgical procedures and ultrasound skills. A second, much smaller, category consisted of perceived personal limitations, including a lack of self-confidence due to too few opportunities during training, as well as a lack of knowledge. Very few SIs considered the management of emergencies as a stumbling block.

In essence, the major findings of the study can be summarised as follows:

- A majority of SIs reported that the labour ward calls were not optimal for teaching.
- Several aspects influenced this opinion significantly (Table 3), but only two remained significant after multiple regression calculations: the opinion that the calls were unacceptable and the opinion that the SI did not learn a lot from the obstetrics registrar.
- Fifty percent of the SIs considered the calls to be unacceptable.
- Three significant confounders for not learning a lot from one's registrar were identified: a suboptimal relationship with the registrar, an opinion that the registrar's knowledge of obstetrics was not good, and an impression that the amount of service provision expected during obstetric calls was unreasonable.
- An analysis of the qualitative data obtained from the surveys and focus group discussions revealed four main issues that reduced learning opportunities in the labour ward:
 - The calls were too long
 - Doing someone else's work
 - Lost learning opportunities
 - Insufficient patient contact
- Two main reasons emerged for not learning a lot from registrars
 - The registrars' busy schedules
 - The registrar's reluctance to be involved in SI teaching due to
 - A lack of interest in teaching
 - Individual personality traits

- A lack of clinical knowledge and teaching skills
- The SIs were satisfied that they had adequate skills to be placed in charge of a labour ward. Two categories of reasons were offered as support:
 - Adequate clinical skills
 - Ability to manage obstetric emergencies

DISCUSSION

The ultimate aim of undergraduate learning in the labour ward is improved maternal and perinatal outcomes. This requires not only practical competence, but also confidence, motivation and a sense of professional identity (Dornan et al 2007). Workplace experience is essential for learning by postgraduate students in O&G (Teunissen et al 2007a). Clinical exposure and caring for patients are also required for successful learning by undergraduate medical students (Lake & Ryan 2004 and Griffith et al 2009). The SIs of SU observed various shortcomings in their labour ward rotation. Crucially, almost two-thirds indicated that learning opportunities during the current 24-hour labour ward calls were suboptimal. This group was significantly more likely to consider the current calls as unacceptable and to note that they learned little from their registrars.

The issues which emerged were not different from those which were described in the literature previously.

Duration of labour ward calls

The SIs perceived the calls unfavourably, mainly because of their excessive duration, the inappropriate tasks expected of them and lost learning opportunities owing to suboptimal participation in clinical activities. Longer working hours amongst undergraduate students in O&G were associated with lower clerkship ratings, an increase in academically unproductive (scut) work, reluctance to consider surgical specialties as a career and deterioration in mental health (Casey et al 2005, Miller et al 2004a, 2004b and Dyrbye et al 2006). While Matthews (2006) found no decline in the post-call cognitive function of sleep-deprived students, a perception of unjustifiably long working hours in O&G may have serious implications for a discipline in which the recruitment of registrars is problematic (Anderson et al 2008).

Abuse during labour ward calls

Medical students often experience abuse, especially in their clinical years (Dyrbye et al 2005). The problems perceived by our SIs were remarkably similar to those reported in developed countries. These include verbal abuse, institutional abuse (e.g. excessive workload, including unnecessary scut work) and the assignment of inappropriate tasks (e.g. porter work, getting food). There were no reports of physical abuse, sexual harassment or racial discrimination, although this was not investigated systematically. Registrars and nurses were those implicated the most. Abuse negatively affects the learning environment (Dyrbye et al 2005).

Various reports have specified interactions between O&G faculty and residents on the one hand, and students during their clerkship on the other, as the major cause for dissatisfaction (Gariti et al 2005, Schnuth et al 2003 and Siassakos et al 2009). O&G trainees have reported being bullied, especially by midwives, more often than trainees in any other specialty (Siassakos et al 2009). Inter-professional barriers are associated with poor clinical outcomes.

Stress

Mental health continues to decline throughout the undergraduate medical course (Dyrbye et al 2006). Physician distress impairs patient care. Various issues raised in our study have been identified previously as sources of stress. These include academic pressure, workload, sleep deprivation and student abuse (Dyrbye et al 2006).

Registrar teaching during labour ward calls

Perceived suboptimal teaching by registrars was the second factor contributing significantly to the opinion that labour ward calls were inadequate. Apart from feeling that they did not learn a lot from their registrars, some students complained that the registrars expected them to do work not associated with learning. The quality of

teaching during clinical clerkships is an important factor that enhances learning and examination performance (Johnson & Chen 2006 and Griffith et al 1998).

American registrars play an important role in teaching undergraduates by “supplying” knowledge and acting as role models (Morrison et al 2005; Whittaker et al 2006 and Mann et al 2007). Supervising, instructing and evaluating medical students comprise almost 25% of their activities (Mann et al 2007). Medical students estimated that a third of their knowledge came from resident teaching and that 50% of teaching in O&G was performed by residents (Ogburn et al 2005). Furthermore, resident teaching has been incorporated as a training requirement as part of the accreditation standards for medical schools in the USA (Ogburn et al 2005). Outstanding resident teaching improves the learners' performance and may also influence their career choices (Ogburn et al 2005 and Griffith et al 1998). A recent controlled study by Gaba et al (2007) showed that, in the opinion of undergraduate students, a structured “resident-as-teacher” programme significantly improved the teaching skills of registrars in O&G. In contrast, there was no improvement in the teaching skills of registrars who taught students while performing regular clinical duties without an educational programme (Edwards et al 1988 and Katz et al 2003). The registrars reported lack of time, uncertainty about their teaching skills and clinical knowledge and inadequate schooling in effective teaching methods as obstacles to student teaching (Yedidia et al 1995 and Busari et al 2002).

Johnson and Chen (2006) found that residents and faculty contribute different aspects to the teaching experiences of medical students, emphasising the value of a combination of faculty and residents as preceptors. These results reinforce the necessity to continue to develop resident teaching skills as an integral part of the education of medical students.

A variety of issues influenced the effective provision of undergraduate education in our department over the last decade. Two factors deserve specific mention. One is

the increase in the size of classes, which has significant implications for clinical training that ideally should be done individually in O&G. Secondly, changes in the profile of both the undergraduate and postgraduate students in the department were associated with new challenges, specifically regarding possible varying prior preparation for their academic tasks. The increase in the already substantial clinical commitments may have somewhat distracted our attention from the impact of these important developments.

Learning environment

Boor and colleagues (2008) studied the clinical learning climates in various O&G departments in the Netherlands by comparing students' perceptions of their experiences during clerkship. The key concept was participation by both departments and students. Their model shows similarities with other work done previously (Dornan et al 2007 and Fuller & Unwin 2003). Dornan et al (2007), in an effort to develop a model relating the processes and outcomes of workplace learning, concluded that the decisive factor was supported participation in practice. Participation gradually progressed from passive observation to performance. Fuller and Unwin (2003) suggest that features of expansive and restrictive participation can help distinguish between different approaches to apprenticeship. This expansive/restrictive continuum is maintained by participation, personal development and institutional arrangements. Expansive approaches promote participation and are characterised by stronger and richer learning environments. Using this model, the learning opportunities created for our SIs during calls can be investigated. Reported perceptions of limited access to learning, uncertainty of the status of students as members of the team, variable individual support and inadequate participation create a balance uncomfortably near a restrictive approach. By not fully including SIs as members of the clinical team, we can slow down their development. Furmedge (2008) reasoned that, with the changing environment in medical education, students

are peripheral participants. He warns that students find it difficult to become “truly legitimate participants” if they are kept so far out on the periphery that it becomes difficult for them to perform tasks that represent necessary and valuable contributions.

Strengths and weaknesses of the study

The majority (95%) of questionnaires distributed over a full academic year were returned. We found statistically significant differences using a mixed methods approach. While our findings are clearly not generalisable, they provide insight into the perceptions of senior undergraduate students about learning opportunities in a labour ward in a developing country, where the absolute volume of patients is further complicated by aspects such as an increasing number of maternal and perinatal deaths as a result of an HIV/AIDS pandemic. We are unaware of similar publications in the literature.

Registrars were not approached for their opinions. They may well have significant grievances of their own that affect their attitudes. Furthermore, the expression of these grievances in the open may certainly affect the SI's attitudes to the labour ward rotation.

The first investigator, who conducted the focus group discussions, is a lecturer and examiner in the department, which is a potential source of bias. However, the questionnaires were used as a method of triangulation. It was clear that the opinions expressed in the focus group discussion were no different from those expressed in the questionnaires. The high degree of agreement between the content of the questionnaires and the focus groups supports the validity of the findings in our study.

CONCLUSIONS

The tension between the need for service delivery and the structured development of medical students is very visible in the labour ward. These experiences impacted

negatively on our students' perceptions of O&G. Their major concerns are similar to those reported in the literature, but problems with the structure of the course and inadequate teaching by some registrars remained as the most significant problems. Calls are the least satisfying element of work for many obstetricians (Bettes et al 2004). However, patient contact remains vital for student learning, and caring for patients is the most beneficial aspect of clinical clerkship in terms of student learning and examination results (Griffith et al 2009). It therefore is necessary to pay attention to the hours that medical students work and the educational value of their clinical activities, also to ensure access to and the quality of women's health care in the future (Whitten & Higham 2007 and Anderson et al 2008).

An encouraging aspect of the study was that the majority of SIs were confident about their clinical skills to manage normal pregnancy as well as obstetric emergencies, in spite of reservations about teaching opportunities. Those who were in doubt clearly specified their concerns. The contrast between the answers of the two groups illustrates the diversity of undergraduate experiences at SU. The perception of the registrar's contribution to learning was critical. Role modelling is fundamental in medical education (Wright et al 1998). The attributes of excellent role models are modifiable and can be acquired.

A module to improve new registrars' practical teaching skills and to familiarise them with the departmental ethos is a priority. This should include clear guidelines on the SI's role in the firm. We are in the process of developing an interactive online course, similar to the response in the USA (Bienstock & Laube 2005), which will be implemented soon. We also need a committee consisting of faculty, registrars, midwives and students who can meet regularly to discuss problems as they develop, as there currently is no line of communication between the various role players.

We plan further studies to assess the effects of the implementation of the online course and the small committee.

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Number of 15w rotations completed previously	· <i>None</i>	37
	· <i>One</i>	43
	· <i>Two</i>	82
	· <i>Three</i>	41
Home Language	· Afrikaans	102
	· English	82
	· Other	20
Learners at last school attended	· > 500	123
	· ≤ 500	78
Gender	· Male	87
	· Female	113
Province of last school attended	· Western Cape	117
	· Eastern Cape	32
	· Other	54
First 3 weeks of rotation	· Obstetrics	103
	· Gynaecology	100
Other post-school qualification	· Yes	15
	· No	188
Academic year	· Five	37
	· Six	166

Table 1: Demographic details of the 203 student interns who returned the questionnaires.

		<u>Response to</u> "The present 24-hour calls are acceptable"			
		TRUE	FALSE	UNDECIDED	TOTAL
<u>Response to</u> "The present 24-hour calls are optimal for teaching"	TRUE	52	13	2	67
	FALSE	36	87	5	128
	UNDECIDED	4	1	3	8
	TOTAL	92	101	10	203

Table 2: Distribution of responses of 203 student interns to two statements: (i) The present 24-hour calls are acceptable (in the columns) and (ii) The present 24-hour calls are optimal for training (in the rows).

Confounder	<i>p</i>	<i>OR (95% CL)</i>
Fifth year student (1 st clinical rotation)	0.01	0.39 (0.17 – 0.86)
Second clinical rotation	0.001	0.30 (0.13 – 0.67)
Opinion that the present 24-hour calls are unacceptable	<10 ⁻⁶	9.47 (4.46 – 21.30)
Opinion that the amount of service provision expected from student interns during obstetric calls was unreasonable.	0.00001	4.83 (2.20 -10.73)
Opinion that student interns were not well informed beforehand about what was expected from them on call days	0.003	3.16 (1.35 – 7.44)
Opinion that student interns had insufficient time to learn to know their patients while on call	0.002	10.09 (1.48 – 430.15)
Opinion that student interns did not learn a lot during the hand-over round on the day after their labour ward call	0.37	2.73 (1.32 – 5.68)
Opinion that student interns did not learn a lot from their obstetric registrars	0.0008	2.95 (1.48 – 5.94)

Table 3: Confounders contributing significantly to the perception that 24 hour calls are suboptimal for learning. (OR (95% CL = Odds Ratio with 95% Confidence Limits)

QUESTION	Agree (%)	Disagree (%)	Undecided (%)
I was well informed beforehand about what was expected from me on my call day	33.5	39.8	26.7
There was sufficient time to learn to know my patients on the call	51.3	32.9	15.8
I used the opportunities to learn by management of patients optimally on my days on call	78.5	9.0	12.5
The amount of work on the call was too much for the medical team to render an optimal service	43.2	23.5	33.3
The relationship between me and my registrar (obstetrics) was good	76.5	11.2	12.2
My assisting at procedures such as caesarean sections and laparotomies will be of value in my internship	85.0	5.0	10.0

Table 4: Student interns' responses to other quantitative questions.

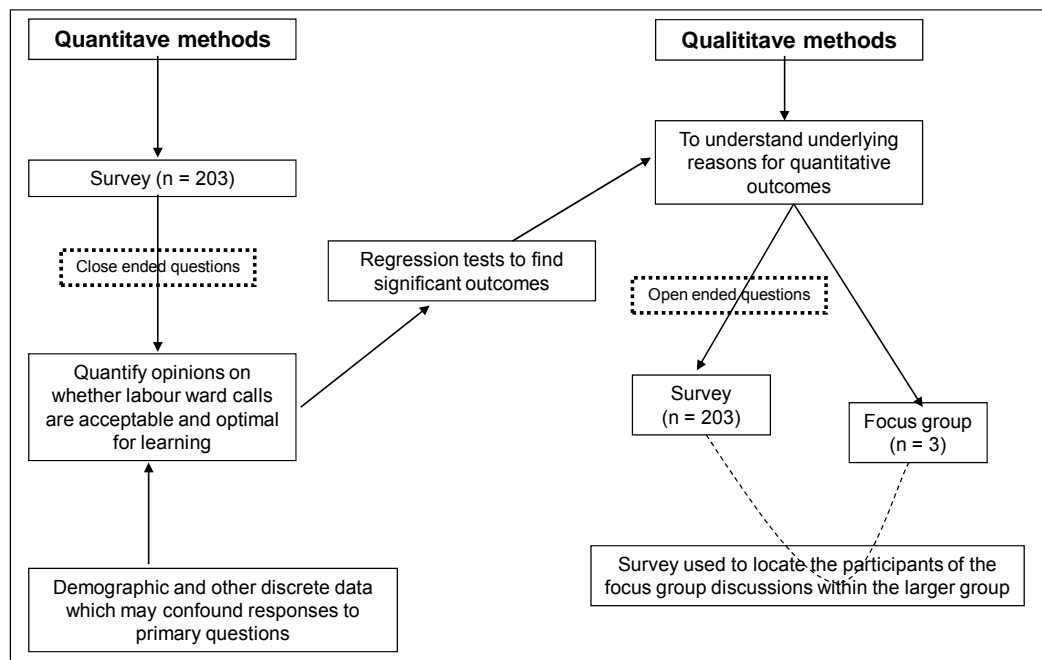


Figure 1: A diagrammatic presentation of the mixed method approach used in the study. Closed ended questions were used to determine responses to the two primary questions and to investigate other characteristics which affected these responses. Qualitative data obtained from open ended questions and focus group discussions were used in an attempt to understand why respondents replied as they did.

ADDENDUM 1

Vraelys / Questionnaire

Student intern spoede / Student intern calls

Dankie vir u bereidwilligheid om die vraelys te voltooi. Dit sal ons help om die na-
ure opleiding van student interns in Verloskunde en Ginekologie te optimaliseer. /
Thank you being willing to complete this questionnaire. It will assist us in optimizing
after hour training of student interns in Obstetrics & Gynaecology.

Beantwoord asseblief al die vrae deur die betrokke nommer in die blokkie te
omkring, tensy anders versoek. / Please answer all questions accurately by circling
the appropriate number in the blocks, unless requested otherwise.

Verskaf asseblief die volgende inligting: / Please supply the following information:

U Ouderdom / Your age	<23	23	24	25	26	>26				
U Huistaal/ Your Home language	Afrikaans		English		Xhosa	Other				
Leerders in u skool / Learners in your school	<250	250 - 499	500 - 749	750 - 999	≥ 1000					
U geslag / Your gender	M	V / F								
Provinsie waarin u graad 12 afgelê het / Province where you completed grade 10	W Kaap / W Cape	O Kaap / E Cape	N Kaap / N Cape	Vrystaat / Free State	KZN	Gauteng	Limpopo	Noord-W / Noth W	Mpumalanga	Ander / Other
U diensgroep / Your firm	1	2	3	4	5					
Eerste 3 weke op blok / First 3 weeks on block	Verloskunde / Obstetrics				Ginekologie / Gynaecology					
U hoogste kwalifikasie / your highest qualification	Graad 12 / Grade 12				Ander / Other					
U studiejaar/ Your year of study	MBChB VI				MBChB V					

Is die volgende stellings (oorwegend) WAAR of ONWAAR? / Are the following statements (more) TRUE or FALSE?

Die huidige 24 spoede is aanvaarbaar / The present 24-hour calls are acceptable	WAAR / TRUE // ONWAAR / FALSE	
Die huidige 24 spoede is optimaal vir leer / The present 24-hour calls are optimal for learning	WAAR / TRUE // ONWAAR / FALSE	Indien ONWAAR: wat stel u voor as oplossing? / If FALSE, what is your solution?
Ek het baie geleer by my kliniese assistent (verloskunde) / I learned a lot from my registrar (obstetrics)	WAAR / TRUE // ONWAAR / FALSE	Indien ONWAAR: wat stel u voor as oplossing? / If FALSE, what is your solution?

Dui asseblief u opinie oor elk van die volgende stellings aan: / Please indicate your opinion on each of the following:

	Stem sterk saam / Strongly agree	Stem saam / Agree	Onseker / Undecided	Verskil / Disagree	Verskil sterk / Disagree strongly
Ek het baie geleer tydens die oorgee-rondte op my spoeddag in die kraamsaal / I learned a lot during the hand-over round on my day on labour ward call					
Ek het baie geleer tydens die oorgee-rondte op die dag na my spoeddag in die kraamsaal toe ek self pasiënte voorgedra het / I learned a lot during the hand-over round on the day after my day on labour ward call when I presented patients myself					
Ek het baie geleer tydens die konsultantsrondte op my spoeddag in die kraamsaal toe ek self pasiënte voorgedra het / I learned a lot during the consultant's round on my day on labour ward call when I presented patients myself					
Ek het baie geleer tydens die 07:30-vergadering op die dag na my spoeddag in die kraamsaal toe ek self pasiënte voorgedra het / I learned a lot during the 07:30-meeting on the day after my day on labour ward call when I presented patients myself					
Ek het baie geleer tydens die 07:30-vergadering op ander dae / I learned a lot during the 07:30-meeting on other days					
Ek het is vooraf goed ingelig oor wat van my verwag is op die spoeddag / I was well informed beforehand about what was expected from me on my day call					
Daar was voldoende tyd om al my pasiënte te leer ken gedurende die					

spoeddag / There was sufficient time to learn to know my patients on the call					
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	Stem sterk saam / Strongly agree	Stem saam / Agree	Onseker / Undecided	Verskil / Disagree	Verskil sterk / Disagree strongly
Ek het optimale gebruik gemaak van die geleentheid om te leer deur pasiënt-voordrag op my spoeddae / I used the opportunities to learn by management of patients optimally on my days on call					
Die hoeveelheid werk op die spoeddag was te veel vir die mediese span om 'n optimale diens te lewer / The amount of work on the call was too much for the medical team to render an optimal service					
Die verhouding tussen my en my kliniese assistent (verloskunde) was goed / The relationship between me and my registrar (obstetrics) was good					
My kliniese assistent (verloskunde) se vakkundige kennis is goed / My registrar (obstetrics) has good knowledge of obstetrics					
Die verhouding tussen my en my kliniese assistent (ginekologie) was goed / The relationship between me and my registrar (gynaecology) was good					
My kliniese assistent (ginekologie) se vakkundige kennis is goed / My registrar (gynaecology) has good knowledge of gynaecology					
My assistensie van prosedures soos keisersnitte en laparotomies sal gedurende my internskap van waarde wees. / My assisting at procedures such as caesarean sections and laparotomies will be of value in my intership					

	Stem sterk saam / Strongly agree	Stem saam / Agree	Verskil / Disagree	Verskil sterk / Disagree strongly
My kennis en verloskundige vaardighede is voldoende om in my internjaar in beheer van 'n kraamsaal geplaas te word, solank iemand beskikbaar is om te kontak ivm die probleme wat ek identifiseer. / My knowledge and skills are sufficient to be placed in charge of a labour ward as intern, provided that someone is available to contact concerning the problems that I identify.				
Indien u saamstem of sterk saamstem, meld asseblief minstens drie vaardighede wat meeste bydra tot u opinie / If you agree or strongly agree, please mention at least three skills which contribute most to your opinion.				
Indien u verskil of sterk verskil, meld asseblief minstens drie vaardighede wat u voel verder ontwikkel moet word / If you disagree or strongly disagree, please mention at least three skills which should be developed further.				

Is die volgende stellings (oorwegend) WAAR of ONWAAR? / Are the following statements more TRUE or FALSE?

<p>Die hoeveelheid dienslewering wat van my verwag is tydens verloskunde spoede was onredelik baie / The amount of service provision expected from me during obstetric calls was unreasonable.</p>	<p>WAAR / TRUE // ONWAAR / FALSE</p>	<p>Indien WAAR, noem asseblief spesifieke probleme wat gepla het/ If TRUE, please note specific problems which troubled you</p>
<p>Ek het baie geleer by my kliniese assistent (ginekologie). / I learned a lot from my registrar. (gynaecology)</p>	<p>WAAR / TRUE // ONWAAR / FALSE</p>	<p>Indien ONWAAR: wat stel u voor as oplossing? / If FALSE: what is your solution?</p>

Daar behoort meer gereelde formele kontakgeleenthede met die modulevoorsitter te wees. / There should be more formal contact session with the module chairperson.	WAAR / TRUE // ONWAAR / FALSE	Indien WAAR: Hoe gereeld en met watter doel? / If TRUE: how often and for what purpose?

Baie dankie vir u tyd. Die vraelys is anoniem en word as uikers vertroulik hanteer.

Thank you very much for your time. The questionnaire is anonymous and will be treated as highly confidential

ADDENDUM 2

An example of data to demonstrate how the theme of doing someone else's work was identified as contributing to SIs opinion that he present 24-hour calls are not optimal for learning. The statements are listed alongside the codes used to identify the source of the statement. (First three columns). This is followed by columns indicating categories identified from the statements. After revision of the categories, they were re-classified into the theme "doing someone else's work". (Some statements contain elements which were classified into other categories which eventually produced other themes. There were several hundred substantive statements available from the data of the focus group discussions and the questionnaires).

			C	Other	Lab	Sent	Sister	Obs	Patient	Pan	Blood	IVI
1	52008	Obs calls are crazy. You end up taking bloods to labs, bed pans to patients and on't even do ground work on patients in admissions			X					X		
1	62009	Working together with the registrar not so much on your own. 24hour calls just make you tired and unable to study. Being on call to 11pm would allow for adequate sleep & therefore quality study. Calls feel more like student labour than student learning about patient labour. More clinic time would also be useful.		X								
2	62009	12 uur spoede of opsioneel. Mens leer nie 03:00 in die oggend nie. Trek net bloed en sit drips op.									X	X
2	52008	Na 11uur saans is ons so moeg dan help dit nie vir enige opleiding nie. Veral by verloskunde --> ons word op en af gestuur om vuilwerk te doen. Dit is glad nie opleiding nie		X								
3	72008	Gynae → keisersnitte. Portiere vir bloed! S;l.'s moet pt'e deurgaans monitor. Vaste eet en rus, tye	X		X			X	X			
6	42009	Only 12 hour calls would allow for more time to study – as all that is done on calls entails putting up drips c petty tasks that the nursing staff are supposed to attend to		X			X					X
6	52008	Dit sal beter wees as studente nie gebruik word om bedpanne aan te dra, konstant lab to moet hardloop en pasiënte vervoer nie. Waarvoor stel die hospitaal portiere aan? Ons is daar om te leer en dit help nie as jy heelnag op en af hardloop om ander mense se werk te doen nie. Die 24h spoed is eintlik aanvaarbaar, maar soos bo genoem is studente uitgeput weens onnodige rondhardloopwerk.			X					X		
7	62009	From 8:00 to 12:00 is reasonable becoz the rest of 6 hrs we are doing porter work			X							
8	52008	The teachers and registrars and MO's should have more focus on teaching and less focus on getting rid of irritating jobs. As a medical		X								

		time to sit even for an hour. No time to read theory on your patient . it is more work than learning.										
19	62009	Less calls, but optimise training by including students in deliveries, instrumental deliveries, theatre. Less work like IV lines, being a porter, bloods etc			X						X	X
20	52008	Have calls till 11pm where in that time you learn optimally, just like in other disciplines, instead of being the porter and person who does all the dirty work after hours. I wouldn't have a problem doing 24h calls if I didn't have to study, and if I didn't have to do another call in the next 20 hours especially Friday and Sunday calls.		X	X							
21	102008	Dis nooit net 24 h lank nie. Dis OK indien by streng 24h gehou word met fokus op opleiding nie bloedtrek en ander useless aktiwiteite nie. Andersinds is 12 h beter.		X							X	
26	92008	After 12 at night not one of us felt we learnt much more (we just ran to the lab/bloodbank). Make calls until 11h/12h and let us come in on post call days			X							
30	102008	You gain equal if calls are less longer. It leaves you with no time to study. We are ??? made use of for staff shortage. No where in the world do students do such heavy calls!!!		X								
33	102008	Students should be on call until 23)) or 16:00 that day. You are exploited and misused!!! You have to beg your registrar to do vaginal examinations.		X								